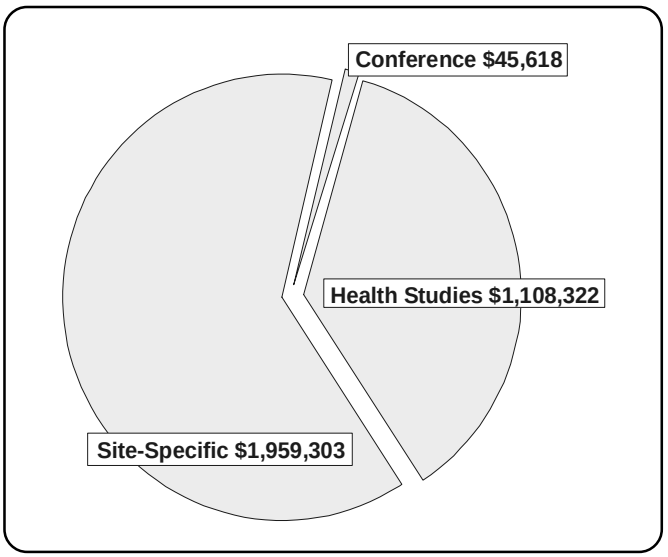
Activities in Arizona

ATSDR in Partnership with Arizona



The Agency for Toxic Substances and Disease Registry (ATSDR) is the lead public health agency responsible for implementing the health-related provisions of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). ATSDR is an Atlanta-based federal agency with more than 400 employees. ATSDR's annual budget for 2002 is $78 million. ATSDR is responsible for assessing the presence and nature of health hazards at specific Superfund sites, helping to prevent or reduce further exposure and illnesses that result, and expanding the knowledge base about the health effects of exposure to hazardous substances.

ATSDR works closely with state agencies to carry out its mission of preventing exposure to contaminants at hazardous waste sites and preventing adverse health effects. ATSDR provides funding and technical assistance for states to identify and evaluate environmental health threats to communities. These resources enable state and local health departments to further investigate environmental health concerns and educate communities. This is accomplished through cooperative agreements and grants. At this time, ATSDR has cooperative agreements and grants with more than 31 states, 1 American Indian nation (Gila River Indian Community), and 1 commonwealth (Puerto Rico Department of Health). From 1990 through 2001, ATSDR awarded more than **$3,113,243** in direct funds to the state of **Arizona.** In addition to direct funding, ATSDR staff provides technical and administrative guidance for state-conducted site activities.

ATSDR Site-Specific Activities

Public Health Assessment-Related Activities

One of the agency's important mandates is to conduct **public health assessments** of all National Priorities List (NPL) sites and of other sites where there might be a significant threat to public health. There are currently **12** NPL sites in **Arizona**.

A **public health assessment** provides a written, comprehensive evaluation of available data and information on the release of hazardous substances into the environment in a specific geographic area. Such releases are assessed for current or future impact on public health. ATSDR, in collaboration with public health and environmental officials from **Arizona**, has conducted **23** health assessments in the state. The following are examples of public health assessments conducted in **Arizona**.

Tucson International Airport Area – Located on the south side of **Tucson**, the Tucson International Airport area was found to have contaminated groundwater in 1981 which resulted in several investigations evaluating the nature and extent of contamination in the area. Previous public health assessments were conducted by ATSDR. Under cooperative agreement with ATSDR, the **Arizona Department of Health Services** (ADHS) has prepared this latest public health assessment. The site includes one main contaminated groundwater plume with

smaller areas of groundwater contamination located east of the main plume. The groundwater contamination contains several organic compounds, including trichloroethylene (TCE) and chromium. Areas of soil and sediment contamination related to surface water runoff from the site were also identified.

In addition to numerous site visits, ADHS also obtained information about the area from ATSDR, the **Pima County Department of Environmental Quality** (PCDEQ), **Arizona Department of Environmental Quality** (ADEQ), U.S. Environmental Protection Agency (EPA), and from residents who attended community meetings.

Based upon the available data and previously published reports, ADHS concluded that since no groundwater sampling data exist for site-related contaminants prior to 1981, the site posed an indeterminate public health hazard prior to 1981. Groundwater represented no apparent public health hazard after the contaminated municipal wells were closed. ADHS found that the site currently poses no apparent public health hazard. ADHS recommended that ongoing remedial efforts continue at the site to reduce on-site contaminant levels and actions should be taken to prevent potential future use of contaminated groundwater by private well users. Finally, TCE and chromium levels should be monitored in contaminated private drinking water wells to ensure that contaminants remain below levels of health concern.

ASARCO, Inc. (Hayden Smelter Site) – The towns of **Hayden** and nearby **Winkelman** are located approximately 90 miles southeast of Phoenix. A smelter operated by ASARCO, Inc. is located on approximately 200 acres in Hayden. Operations began at the site in 1909. Historic emissions contained large quantities of lead, arsenic, sulfur dioxide, particulate matter, and other materials. Residents of both towns have expressed concerns that metals from the smelter emissions have been causing health problems. The ADHS, under cooperative agreement with ATSDR, has prepared a public health assessment for public comment on this site.

ADHS staff visited the site several times and met with community members throughout 1999 and 2000. Environmental data collected from water, soil, and air in the Hayden and Winkelman area were used to estimate environmental exposures. The study also evaluated available health outcome data from previous epidemiological and biological monitoring studies conducted in the area. The results of this evaluation suggest that historical release of sulfur dioxide, although at levels within national standards, could present health concerns for people with compromised respiratory systems. Exposures to other site-related contamination do not appear to pose a public health hazard. ADHS recommended the distribution of health education materials regarding arsenic in the air and water, lead based paint in older homes, and sulfur dioxide air concentrations. ADHS will continue to address community concerns as requested. A final report will be available by September 2002.

A **health consultation** is a written or oral response from ATSDR to a specific request for information about health risks related to a specific site, chemical release, or hazardous material. It is a more limited response than a public health assessment. To date, **33** documented health consultations have been performed at **22** sites in **Arizona**.

The wildfires that have devastated parts of **Arizona** during the 2002 fire season have resulted in ADHS' release of health advisories for people with compromised respiratory systems. ADHS advised authorities and the public on when people sensitive to smoke needed to take shelter. Additionally, ADHS found that the emotional trauma resulting from loss of property made it difficult for people to think through steps they needed to take to protect their health and property. In response, ADHS developed a short, but comprehensive, brochure to help people prioritize steps they needed to take to protect themselves and to act as a guide used when re-establishing households.

Below are examples of health consultations conducted in response to fires in **Arizona**. ATSDR helped build ADHS' capacity to address the health issues involved with the fires.

Wood Debris Fire (Queen Creek) – In October 2001, a large pile of wood debris from stored citrus trees caught fire in **Pinal County** near the **Queen Creek** area. Smoke generated by the fire could be smelled up to 40 miles away from the site. Under cooperative agreement with ATSDR, ADHS conducted a health consultation to determine the extent of the public health threat from the fire. ADHS staff issued a health advisory for the Queen Creek area and contacted local schools to communicate health risks, provide safety advice and assess the public health impact.

A health consultation was prepared using air sampling data collected by ADEQ and observations made by ADHS staff during the event. ADHS found that the smoke from the fire likely caused an increase in respiratory problems in some residents of Queen Creek consistent with wood smoke inhalation, suggesting that the fire represented a short-term public health hazard. ADHS recommended that any individuals who experience symptoms from smoke inhalation seek medical attention from a primary care physician.

Refuse Fire (Naco) – A refuse dump near Sonora, Mexico and **Naco, Arizona**, caught fire in December 2001. The smoke could reportedly be smelled up to 17 miles away from the fire. ADHS and the **Cochise County Health Department** issued public health advisories for the first two evenings of the fire. Under cooperative agreement with ATSDR, ADHS along with ADEQ conducted a health consultation to determine the extent of the public health threat from the fire. ADHS staff contacted local schools to communicate health risks, provide safety advice, and asses the public health impact of the fire.

Air sampling data collected by ADEQ and observations made by ADHS staff during the event were used in the consultation. ADHS found that the smoke likely caused an increase in respiratory problems in some Naco, Arizona and Sonora residents on the first two days of the fire. The symptoms would be expected to be consistent with smoke inhalation, suggesting that the fire represented a short-term public health hazard. No further recommendations were indicated.

Educating Health Professionals and Community Activities

Another aspect of the cooperative agreement program includes the support of educational activities for physicians and other health professionals and communities concerning human exposure to hazardous substances in the environment. Under ATSDR's cooperative agreement program, ADHS has received funding as well as technical assistance for the development of approximately 40 different educational tools. All of these relate to human health issues associated with toxic substances in the environment. Also, nearly 6,000 **Arizona** residents have attended 94 environmental health education seminars, workshops, and town meetings.

During the summer of 2002, ADHS and ATSDR collaborated to provide residents and communities impacted by the **Rodeo/Chediski fire** with timely and accurate information concerning public health issues associated with the massive fire. Health advisories addressing smoke as well as health issues and hazards associated with re-entry, retardants, fire fighting and clean-up were issued on an ongoing basis. In July 2002, an assessment of health effects in selected communities affected by the fire and smoke was conducted which involved approximately 400 households.

In 1999, ATSDR developed the border health program to provide funding and technical assistance to the **Area Health Education Centers** (AHEC) located along the U.S./Mexico border. In 2001, the AHEC program was expanded to include **Arizona**. Building on community needs assessments, a plan was developed to provide a series of environmental health training seminars for local health care professionals. Continuing education presentations were provided by ATSDR staff at both the annual Rural Health and Primary Health Care conferences.

Through a national cooperative agreement with the **Association of Occupational and Environmental Clinics**, ATSDR supports the **Samaritan Occupational and Environmental Toxicology Clinic** at the **Good Samaritan Regional Medical Center** campus in **Phoenix**. Services include evaluation and care for patients with possible or established toxicologic disease resulting from occupational or environmental exposures as well as educational activities for health professionals.

Health Studies

Health studies are investigations of potentially exposed persons and are designed to assist in identifying exposure or effects on the public's health. Health studies also define health problems that require further investigation through, for example, a health surveillance or epidemiologic study. Following are descriptions of the site-specific health studies and investigations that ATSDR conducted or supported in **Arizona**.

National Exposure Registry - Trichloroethylene (TCE) Subregistry - TCE, a synthetic chemical that does not occur naturally in the environment, was selected for the first chemical subregistry of the National Exposure Registry. The greatest source of TCE in the environment is, by far, industrial; factories use TCE to remove grease

from metals. TCE can also enter air and water when it is released from hazardous waste sites. Occupational and animal studies suggest that TCE is associated with neurotoxicity, genotoxicity, and immunotoxicity. Data concerning nonoccupational exposures, such as environmental exposures and their potential health effects, however, are sparse and inconclusive. ATSDR has selected TCE as a target substance for one of its exposure subregistries and has selected sites throughout the nation where exposures have occurred. At these sites, initial (or baseline) and follow-up interviews have been conducted; 4,986 people from 15 areas associated with hazardous waste sites in 5 states have been enrolled in the TCE Subregistry.

Health outcome rates for the TCE Subregistry are compared with national rates, as determined by the National Health Interview Survey. Health outcomes reported in significant excess by the TCE Subregistry members during one or more of the data collection periods (for certain age and sex groups) included speech impairment; hearing impairment; anemia and other blood disorders; effects of stroke; urinary tract disorders; liver problems; kidney problems; diabetes; and skin rashes, eczema, or other skin allergies. Health outcomes that were significantly lower among registrants were hearing impairment (after age 25 years); asthma, emphysema, and chronic bronchitis; arthritis, rheumatism, or other joint disorders; and other respiratory allergies, such as hay fever.

The site in **Arizona** included in the TCE Subregistry is the **Tucson International Airport** site. Baseline interviews were conducted in 1994; follow up interviews were conducted in 1995, 1997, and 2000.

Baseline Analysis of the Trichloroethylene (TCE), Trichloroethane (TCA), and Benzene Subregistries Risks of Health Outcomes Among Female Registrants: The Impact on Women of Trichloroethylene Exposures - The existing information on the impact of health for females exposed to hazardous substances, particularly the low-level, long-term exposures found at waste sites, is very sparse. Most information on the health impact of chemical exposure comes from occupational studies, predominantly healthy male workers, and toxicological studies of higher levels and shorter duration. To gain more knowledge about the potential impact of TCE environmental exposures on females, the data collected as part of the National Exposure Registry TCE Subregistry was used to compare the female subpopulation reporting rates with (1) national norms as determined by the National Health Interview Survey and (2) their male counterpart's rates for 19 health conditions and six symptoms.

For females and males, significant increases in reporting in one or more age groups were found for anemia or other blood disorders, skin rashes/eczema/allergies, and urinary tract disorders (including prostate trouble). Significant increases were found for females only for kidney disease; liver problems; diabetes; effects of stroke; and ulcers, gall bladder trouble, or stomach or intestinal problems; for males only, speech and hearing impairments. The results of the intrafile comparison of the male and female reporting rates show significantly increased difference for females—indicating gender differences—for several health outcomes. Intrafile comparisons of the symptom reporting rates also indicated increased reporting by females versus males. The results were suggestive that the environmental exposures (TCE and other chemicals) experienced by the TCE Subregistry members might have had a greater health impact on the female registrants than the male registrants.

Toxicological Profiles

ATSDR develops toxicological profiles that describe health effects, environmental characteristics, and other information for substances found at NPL sites. These profiles contain information on pathways of human exposure and the behavior of hazardous substances in environmental media such as air, soil, and water. Since 1995, more than **370** of these profiles have been sent to requesters, including representatives of federal, state, and local health and environmental departments; academic institutions; private industries; and nonprofit organizations, in **Arizona.**

If you would like additional information, contact ATSDR toll-free at (888) 42ATSDR, that is, (888) 422-8737 or visit the homepage at http://www.atsdr.cdc.gov